Arizona Statewide Water Conservation Strategy

Prepared for:

Governor Janet Napolitano

Governor's Drought Task Force

October 8, 2004

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ARIZONA STATEWIDE WATER CONSERVATION STRATEGY

Executive Summary

Arizona places a high priority on managing its water resources to ensure that secure water supplies are available now and well into the future. Arizona's arid climate dictates that water sources must be available to sustain Arizona's economy and quality of life. Arizonans have been planning sustainable water resources for many years and have benefited from nearly 25 years of wise water resource management.

Although Arizona is known for its dry climate, recent drought conditions have had the greatest impact in the state's rural areas. Governor Janet Napolitano signed Executive Order# 2003-12, on March 20, 2003, establishing the Governor's Drought Task Force. The Governor directed the Arizona Department of Water Resources (ADWR) to provide statewide leadership in this effort with an emphasis on providing assistance to rural communities with potable water supply needs.

Among the provisions of the Executive Order are two requirements that pertain directly to conservation: 1) the development and implementation of a statewide water conservation strategy and 2) the establishment of a Conservation Education Task Force Group.

This document seeks to provide guidance to water users within the State and will strive to develop the building blocks for a long term, statewide conservation strategy and in the short-term, a phased approach for implementation of the strategy. This effort will not attempt to develop a "one-size fits all" approach to water conservation. Over the long term, it will merely provide the basis for assisting communities all over the state to establish new programs, strengthen existing programs and provide guidelines for more efficient water use. A complete conservation strategy must include the use of supply side (leak detection, etc.) and demand side (reductions in use) programs.

Our state is unique in the fact that 75% of the state's population resides within Active Management Areas (AMAs). This effort does not seek to create regulatory rules or requirements where they currently don't exist (i.e. non-AMA's). Municipal providers located within AMAs are required to develop and implement water conservation programs. Many other communities outside of AMAs (Payson, Flagstaff, Sierra Vista, and Sedona) have already developed and are maintaining aggressive water conservation programs. A statewide conservation strategy should not only provide the basis for a stronger conservation ethic but also provide the flexibility for local communities to develop their own plans to meet their own specific needs.

The statewide effort will strive to expand the reach of existing programs, create new conservation tools for rural communities, promote water education throughout the state, create guidelines for more efficient use of water and provide suggestions for funding and implementing conservation programs.

SUMMARY OF KEY RECOMMENDATIONS:

1. **Creation of a statewide conservation office to implement new conservation programs,**
2. **Secure a dedicated funding source for conservation office and for statewide water conservation programs,**
3. **Expand the *"Reduce Your Use"* conservation messaging campaign,**
4. **Adoption of w*ater conservation "ABCs"* for residential and large water use sectors and encourage use of best available technologies,**
5. **Creation of conservation incentives (tax credits),**
6. **Provide technical assistance (leak detection & audit training programs)**
7. **Creation of a state sponsored conservation web site,**
8. **Creation of voluntary benchmarks and conservation goals at local levels,**
9. **Continue/expand existing education programs through working with school districts, education centers and local communities,**
10. **Develop partnerships to provide the funding and "buy-in" for establishing new conservation programs,**
11. **Creation of a Rural Water Systems Development Fund for conservation,**
12. **Creation of a Water Conservation Advisory Board appointed by the ADWR Director.**

The overall goal of this strategy is to achieve greater water use efficiency for the state resulting in measurable water savings. The development of conservation goals will involve input from stakeholders statewide and will require a review of existing water use data, climate divisions tied to the Arizona Drought Preparedness Plan, and should be based on good science. Efforts to measure

and report water use savings should be monitored at a local level and successes shared statewide.

The Statewide Water Conservation Strategy has been reviewed and discussed in a series of public forums during the summer and fall of 2004; however, implementation of the conservation initiatives, if approved by the Governor and the Drought Task Force will take time. This strategy provides an opportunity for the state of Arizona to go beyond creating a better water conservation ethic, but also provides the means to reach the ultimate goal: saving water for Arizona.

Arizona Statewide Water Conservation Strategy

October 8, 2004

INTRODUCTION

Arizona places a high priority on managing its water resources to ensure that secure water supplies are available now and well into the future. Arizona's arid climate dictates that water sources must be available to sustain Arizona's economy and quality of life. Arizonans have been planning sustainable water resources for many years and have benefited from nearly 25 years of wise water resource management.

There are four categories of water supplies available in Arizona: Colorado River water, surface water other than Colorado River water, groundwater and effluent. The utility of each type of water depends on its quantity, quality, reliability and economic feasibility.

Today's Arizona is faced with lingering drought conditions and declining storage reservoirs on the Colorado River. While our years of water resource planning have served Arizona well, prolonged drought conditions have resulted in impacts statewide with the greatest impacts felt in the state's rural areas. Groundwater pumping will likely increase with declines in surface water supplies due to below normal precipitation levels over several years.

On March 20, 2003, Governor Janet Napolitano signed a Executive Order# 2003-12 establishing the Governor's Drought Task Force. The Governor directed the Department of Water Resources (ADWR) to provide statewide leadership in this effort with an emphasis on providing assistance to rural communities with potable water supply needs. Among the provisions of the Executive Order are two requirements that pertain directly to conservation: 1) the development and implementation of a statewide water conservation strategy; and 2) the establishment of a Conservation Education Task Force Group.

This document will strive to develop the building blocks for a long term, statewide conservation strategy and in the short-term, a phased approach for implementation of the strategy. This effort will not attempt to develop a "one-size fits all" approach to water conservation. Over the long term, it will merely provide the basis for assisting communities all over the state to establish new programs, strengthen existing programs and provide guidelines for more efficient water use. A complete conservation strategy must include the use of supply side (leak detection, etc.) and demand side (reductions in use) programs.

Our state is unique in the fact that 75% of the state's population resides within Active Management Areas (AMAs). This effort does not seek to create regulatory rules or requirements where they currently don't exist (i.e. non-AMA's). Municipal providers located within AMAs are required to develop and implement water conservation programs. Many other communities outside of AMAs (Payson, Flagstaff, Sierra Vista, and Sedona) have already developed and are maintaining aggressive water conservation programs.

A statewide conservation strategy should not only provide the basis for a stronger conservation ethic but also provide the flexibility for local communities to develop their own plans to meet their own specific needs.

GOALS AND OBJECTIVES:

The overall goal of the Arizona Statewide Water Conservation strategy is to provide guidance and assistance to achieve greater water use efficiency, resulting in water savings and an increased conservation ethic for all water users in the State of Arizona.

Future success of water conservation efforts in Arizona is largely dependent on encouraging municipalities, water providers and the public to adopt a "water conservation ethic." Education, advertising and increased public awareness are necessary to affect positive water use behavior changes. Use of new technologies for water efficiency, rebate programs, audit and leak correction, to cite just a few of the programs mentioned in this report, are necessary to achieve measurable water savings.

If a culture of water conservation and water savings is to be achieved in Arizona, as is the premise of this report, clearly additional resources for funding and partnerships must be found or made available. This effort will strive to develop federal, state and private partnerships to facilitate implementation of the statewide strategy. These partnerships might include but not be limited to: a. Funding, b. Expanding Public Outreach & Education and c. Technology Transfer.

The State of Arizona should strive to identify programs with the highest potential for water savings by conducting a review of existing programs and evaluating the need for new conservation programs. An overall "needs assessment" for communities is recommended and could be a valuable tool in the identification of conservation potential. The conservation efforts outlined in this report will reach statewide but seek to assist rural communities. Due to the limited availability of alternative supplies, many of the state's rural areas have been the hardest hit by drought. It is recognized that the rural and/or non-AMA areas without alternate supplies of water are often by necessity among the more water efficient water communities in the state. Some of these communities have implemented low-cost conservation measures such as: time of day/day of week watering schedules, water waste prohibitions, etc. Some rural communities may lack the financial resources needed for implementing incentive programs, retrofit/rebate programs, etc. While there are many tools available for saving

water, this effort identified 12 recommendations as the basis for a long-term conservation implementation plan.

SUMMARY OF KEY RECOMMENDATIONS:

1. **Creation of a statewide conservation office to implement new conservation programs,**
2. **Secure a dedicated funding source for conservation office and for statewide water conservation programs,**
3. **Expand the *"Reduce Your Use"* conservation messaging campaign,**
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LONG-TERM MEASUREMENTS OF SUCCESS:

Program evaluations are necessary to determine whether or not efforts are succeeding, funding should continue or programming changes should be made. The type of evaluation needed is often dependent on the type of program and the desired outcome. Evaluating the long-term success of this effort will require careful consideration. Historic water management and conservation efforts detailed later in this report demonstrate planning foresight, efforts to reduce water use, creation of valuable conservation materials and extensive community outreach. In this light, an evaluation of past success can be measured both in

terms of water savings and estimated numbers of people reached with a conservation message. Evaluation of existing and new programs should continue in order to develop a water use "Score–card" for the state over the next ten years. Achievements in water conservation should be reported and used as models for communities that could benefit from information sharing.

Some states have gauged their conservation success by measuring reductions in use against a baseline of statewide water use. There is no established statewide water use baseline, or average per person use for Arizona. This is partially because outside of the AMAs, a fair percent of water uses are not metered. Water use information is also difficult to obtain given the socioeconomic, hydrogeologic and climatological diversity that characterizes our state.

The last statewide information on water use, the *Statewide Water Resources Assessment*, was prepared by the ADWR in 1994. The USGS in their annual report on water use in 1995 detailed surface and groundwater use and provided a gallons per capita per day comparison by state. Since conditions have changed dramatically within the state in the last 10 years, a calculation of annual water use information for each community (capable of providing such data) and updating statewide water use by sector is recommended.

Water savings compared against a baseline water use would require collecting existing data and assessing the need for future data collection. The voluntary establishment of conservation goals at a local level could facilitate the process of determining a baseline water use for the state. Water savings as measured against a local conservation goal (based on climate, community needs, etc.) would provide a measure of local conservation efforts but would necessitate a measurement of the end user's water use. Studies have indicated that reductions in outdoor water use offer the greatest opportunity for residential savings.

It should be noted that establishment of local conservation goals are merely a suggestion for assisting communities in gauging their success. Many communities either as a result of mandates or through existing conservation programs already have conservation goals. This effort does not seek to create regulatory rules or requirements where they currently don't exist (i.e. non-AMA's).

LONG –TERM CONSERVATION IMPLEMENTATION PLAN

Success of the Statewide Conservation Strategy will depend on a phased approach over the next couple of years. With that in mind the following planning strategies are offered for consideration and comment. Recommended phases are as follows:

PHASE 1: Short-term Activities:

1) Create Office of Water Conservation

This recommendation is made to ensure that the implementation of programs, education, and funding can be facilitated over the next several years. A coordinated statewide conservation effort is needed to achieve measurable outcomes and maintain the commitments established through this initial report.

An American Water Works Association (AWWA) Survey of State Water Conservation Programs concluded that one indicator of a state's commitment to conservation is whether there is an office responsible for implementing or coordinating some of the state's conservation programs. [1] The survey, conducted in 1997, showed that at the time 39% of the states had an Office of Water Conservation or an equivalent. Additionally, the survey suggests that the Office of Water Conservation must be integrated with water planning functions of the responsible state agency. The survey also suggests that the state's role in hydrologic planning and management powers helps focus conservation where it can yield the most resource management benefit – "and where conservation will be most likely to succeed."

Recommended staffing for this office is estimated at four full time employees in addition to initial funding for the creation and implementation of new conservation programs. The Conservation Office would have the responsibility of carrying out the following specific action items:

- Securing funding for statewide conservation outreach and assistance:

  It is envisioned that monies for conservation would be returned to the communities for conservation outreach and technical assistance. A centralized source for procurement of educational materials, equipment (e.g. leak detection), brochures, and website for key instructional information (e.g. outdoor watering scheduling, etc.) may provide economies of scale. For example, the municipalities involved in the Water Use It Wisely campaign share resources enabling limited resources to be used to their fullest extent.

  The Water Conservation Office would serve as a central repository for conservation plans submitted by water providers as an eligibility requirement for consideration of statewide conservation funding. This office would also serve as an information clearinghouse.

- **"Reduce Your Use"** conservation media messaging efforts:

  This is an effort to create a greater "call to action" for water conservation efforts throughout the state. While there is a need to provide a consistent water conservation message to the public, it is time to ask Arizona

residents to reduce their outdoor water use. These new messages will be used in coordination with existing media efforts, however, the use of radio and billboards will be investigated in addition to low cost and no-cost water conservation messaging. Opportunities to partner with Salt River Project, Central Arizona Project and municipalities in such efforts will be investigated.

Water conservation should be a lifestyle and a strong ethic that we promote. We have formed the basis for a sound media-messaging program through creation and continuation of the Water, Use It Wisely Program and the Arizona Restaurant Association Table Tent Program. Additional messaging will focus on promoting the conservation efforts of the State of Arizona over the last twenty-five years and Arizona's commitment to wise water management in the future.

- Adopt **Water Conservation "ABCs"** for residential and large water use sectors:

  Conservation "ABCs" are recommended water saving measures. There are about as many water efficiency measures that can be implemented, as there are cities and towns in Arizona. At the same time, the 80/20 rule often applies to water conservation: the greatest volume of savings may be achieved by the broad implementation of a select group of measures. Types of water efficiency measures that typically will yield the highest water savings within each customer group would include: Reducing lost and unaccounted-for water to a maximum of 10% within 3 years, conducting annual system audits that include ongoing leak detection and repair, universal metering, including source metering within 5 years and creation of incentives to support ABCs: state funding support for rural systems' conservation programs, retrofit and rebate programs.

  Conservation ABCs can also include standard conservation measures for the average homeowner:

  - reducing discretionary outdoor water uses (car washing, sidewalk washing, landscape watering, etc.),
  - reducing evaporation losses by avoiding watering during the heat of the day,
  - detecting and fixing leaks,
  - turning off the water when not in use,
  - using ET based irrigation controllers,
  - limiting showers to five minutes or less,
  - removing turf, discouraging winter over-seeding
  - only doing full loads of laundry or dishes,
  - installing low water use landscaping,
  - use of pool covers (where practical) to reduce evaporation,
  - preventing water waste by adjusting sprinklers to reduce overspray and run-off into streets.

- Creation of Conservation Incentives:

  Develop incentives for the installation of greywater systems and rainwater harvesting systems, water efficient appliances (front loading washers, re-circulating hot water systems, dual flush toilets, etc.). Incentives could be offered in the form of a tax credit or rebate program. The Office of Water Conservation should investigate the development of water waste ordinances based on efforts already underway by local communities.

- Creation of State Conservation Web Site:

  The development of a state sponsored web page to disseminate water conservation information is needed. A state sponsored website should be created and dedicated to providing up to date information on existing programs, technology advances and sources of funding. Several states have developed websites tied to the conservation programs developed within their states or various locales. Links to statewide conservation programs will be listed here as a means to showcase existing conservation programs and also to provide up-to-date contact person information.

- Developing voluntary benchmarks or reasonable conservation goals:

  Providing assistance for the development of voluntary benchmarks at a local level is key to achieving measurable water savings. While the establishment of voluntary conservation goals or benchmarks will require a review and assessment of existing information to determine additional data needs, this approach offers the best opportunity to measure the success of our conservation efforts long –term. Benchmarks can provide a necessary tool for many communities who have no specific water use goals and may provide needed leverage for the establishment of new conservation programs at local levels. Benchmarking may initiate healthy water conservation competitions between communities and counties in various parts of the state. Such voluntary responses encourage cooperative community efforts and increase local water resources stewardship. Benchmarking may be the basis to guide available financial resources when communities are planning for the development of new water conservation programs.

- Continue/Expand Existing Education Programs:

  "Education programs are by far the most common demand-side water use efficiency measure in the Southwest". (Western Resource Advocates, Smart Water, 2003).

  Water education is key to reducing the demand for water and providing a sound basis for water management decisions. While education should not be the only component of a water conservation program, it should

certainly be a cornerstone. Education programs can be relatively inexpensive to initiate compared to the cost of many demand side measures. Some of the benefits to developing an education program include providing a necessary foundation for creation of other programs, raising water supply awareness, creating the basis for water use behavioral changes, and enhancing stewardship of a valuable resource. Existing programs like the "Water, Use It Wisely" ad campaign targeting the general public and Project WET (Water Education for Teachers) are expanding from locally funded programs statewide outreach efforts. These programs have served as linchpins in Arizona for many water conservation efforts at the local, state, and federal level. Specific water education recommendations are as follows:

1. Evaluate existing general conservation messaging to assess the need for new messages with a stronger "call to action" and promotion of Arizona's history of wise water management.

2. Assess the need for a greater geographic distribution of existing conservation materials for use in rural areas.

3. Establish partnership with Department of Education for the purpose of discussing water education in Arizona School Districts.

4. Establish working relationship with Arizona School Districts to provide water education materials with a consistent message to Arizona teachers.

5. Work with Arizona School Districts to provide water education materials and encourage their use as tools to help teachers teach the water components outlined in the Arizona Academic Standards for Science. (AIMs testing requirements)

6. Work with Arizona School Districts to draft a plan to conduct water education events and to disseminate new water education materials that are currently under development.

7. Work with Natural Resource Conservation District education centers and County Cooperative Extension offices for dissemination of conservation materials.

8. Assess the need for post high school water education programs to include college level and adult education programs.

- Develop Partnerships:

  Creation and implementation of a statewide conservation strategy requires the involvement of stakeholders. Working with federal, state and

local agencies to achieve a consistent water conservation message and acceptance of a new conservation ethic for the state is key. Efforts to reach rural and outlying areas will be on going. The Rural Watershed questionnaire distributed by the ADWR in 2003 revealed that many smaller communities had very limited conservation resources. At a very basic level, there was a need for conservation printed materials, access to information about rebate programs and ordinance development, and also the need for educational materials for teachers and students.

Existing efforts have been successful in large degree to the development of cooperative conservation partnerships and citizen participation. Local communities have worked with their water providers/municipal water conservation offices to develop community based conservation efforts. Conservation information sharing between communities on a statewide basis already exists but these efforts should be expanded to the greatest extent possible. Water conservation plans should be drafted with buy-in from the communities and implemented to the extent that resources are available. There may be great differences in each community's ability to carry out programs. Developing a symbiotic relationship at the local level may foster a greater acceptance of voluntary reductions and any changes to water rates if necessary. Consideration is being given to establishing a few regionally based partnerships with common conservation interests.

2) Create a Rural Water Systems Development Fund for Conservation

A needs assessment of rural water systems should be conducted to determine conservation potential and what assistance is needed in addition to water infrastructure improvements so that funding can be established to meet these needs. It is likely that a needs assessment would reveal that technical assistance for rural areas should be the focus of this effort.

3) ADWR Director to create and appoint Water Conservation Advisory Board (WCAB)

Creation of a Water Conservation Advisory Board is recommended in an effort to provide water conservation guidance on a yearly basis. This guidance would ideally be based on current conditions and conditions into the foreseeable future. The WCAB could act in an advisory capacity to the Director of the Department of Water Resources and could assist in determining the success of existing programs and development of new programs on a statewide basis.

PHASE 2: Water Efficiency Improvements:

- Review existing water-use data by region and climate divisions (as adopted by the Arizona Drought Preparedness Plan) to determine conservation potential and assist in identifying regional conservation approaches.

- Work cooperatively with local communities to establish local conservation goals/guidelines for more efficient water-use and help to develop regional conservation strategies for achieving the highest water use savings in conjunction with the most appropriate use of available technologies.

- Establish methods for expanding data collection and assess reporting capabilities in rural areas to establish water use and potential savings by region.

- Create a Water Conservation Advisory Task Group consisting of municipalities, water providers, individual stakeholders and rural communities, etc. that would meet to identify best practices, communicate needs and further the adoption of conservation measures across the state, monitor the progress, and continually enhance and guide implementation of conservation efforts within the state.

PHASE 3: Information Sharing and Technical Assistance

- Assess need for research into new conservation technologies.

- Develop rebate programs or State tax credits to encourage the purchase or replacement of high water using fixtures or appliances with efficient low water use models (e.g. high-efficiency clothes washers, dishwashers, and dual flush & ULF toilets). Tax credits could also be given to Laundromats and common-area laundry rooms in multi-family housing that replace older high water using washers with low-water-using models.

- Work with the Arizona Corporation Commission to provide informational workshops with ADWR to provide input on Conservation Based rate structures and speakers/specialists if requested by local communities.

- Provide assistance, if requested, to local jurisdictions for the development and implement of ordinances or conditions of new service to support conservation efforts e.g. water waste prohibition.

- Develop technical seminars targeted at large users, i.e., irrigators, and managers of industrial properties and public institutions.

- Conduct workshops and technical seminars throughout the state on a regular basis.

- Develop a State recognition program that acknowledges water-conserving communities.

PHASE 4: Public Education and Outreach

- Establish a Youth Advisory Council to offer opportunities to junior high and high school students to assist in planning water conservation projects in their local communities.

- Develop an award program that acknowledges water conservation efforts to include showcasing water conserving residential landscapes and acknowledgement of water conserving golf courses, other turf facilities and industrial use savings.

- Develop workshops for water suppliers (medium and large systems) on how to plan and implement water conservation programs.

- Develop educational workshops, as needed, to be provided through existing educational networks. (County Cooperative Extension Offices, Master Watershed Stewards, Project WET Facilitators)

- Develop workshops for rural water suppliers on how to plan and implement water conservation programs, with specific emphasis on small system program planning, and leak reduction.

HISTORICAL PERSPECTIVE: ARIZONA WATER MANAGEMENT

Arizona's leaders have demonstrated insight and innovation by establishing water resource management as a top priority. Key accomplishments for the State of Arizona include:

- Securing Arizona's annual 2.8 million acre-feet allocation of Colorado River water: Rights to use Colorado River water are quantified by the statutes, compacts, treaties, contracts, court decrees, regulations, rules and guidelines commonly referred to as the "Law of the River". Based on the Law of the River, Arizona has the right to use 2.8 million-acre feet annually of Colorado River water. Mohave, La Paz and Yuma county water users rely on Colorado River as their principle water supply.

- Construction of surface water reservoirs: Surface water from lakes, rivers and streams is Arizona's major renewable resource. However, because of our desert climate, the amount of surface water available can vary dramatically from year to year, season to season, and place to place. In order to make the best use of the surface water when and where it is needed, storage reservoirs and delivery systems have been constructed throughout the state. Most notable are the major reservoir storage systems located on the Salt, Verde, Gila and Agua Fria rivers. Almost all of the natural surface water in Arizona has been developed.

- Completion of the Central Arizona Project (CAP) canal in 1993: The CAP canal stretches 336 miles from the Colorado River to interior parts of the state. Completed in 1993 at a cost of $3.6B, the CAP is capable of diverting up to 1.8 M acre-feet of Colorado River water and delivering it to Phoenix area cities, farming operations in Maricopa and Pinal counties, and the Tucson area. Notwithstanding the 1.8 million acre-feet diversion capacity, a normal year's supply is 1.5 million acre-feet of Colorado River water.

- Underground Storage and the creation of the Arizona Water Banking Authority in 1996: The Arizona Water Banking authority was created to store excess Colorado River water, i.e. water for which there is no immediate demand, underground for future use in times of shortage. Additionally, individual artificial recharge projects (e.g. Granite Reef Underground Storage Project) have been developed and are operated by a variety of municipal water users in the AMAs to address concerns regarding future water shortages and to reduce reliance upon mined groundwater as a source of supply.

- Management of groundwater supplies in AMAs: In 1980, the Arizona Legislature enacted the Groundwater Management Act (GMA) to address groundwater depletion in the state's most populous areas, and directed the Arizona Department of Water Resources (ADWR) to implement the provisions of the act. The resulting Groundwater Code provides for the establishment of five Active Management Areas (AMA) within the state. Groundwater use is regulated within these areas and ADWR administers the state laws, explores augmentation of supplies and works to develop public policies to promote efficient use and equitable allocation of water supplies. Municipal water providers located within AMAs are required to develop and implement water conservation programs. Approximately 75% of Arizona's population resides in the AMAs and are therefore subject to the elements of these water conservation programs.

- Assured Water Supply Rules: Arizona's Assured Water Supply Program is designed to sustain the State's economic health by preserving groundwater resources and promoting long-term water supply planning within the state's five AMAs. This is accomplished through regulations, which mandate the demonstration of sufficient water supplies for new subdivisions.

  In 1973, the Arizona Legislature enacted a statewide water adequacy statute as a consumer protection measure (A.R.S. § 45-108). The law was passed in response to incidences of land fraud involving the sale of subdivision lots that were later found to have insufficient water supplies. This law requires developers to obtain a determination from the State regarding the availability of water supplies prior to marketing new subdivision lots. Developers are then required to disclose any "inadequacy" of the supply to potential lot buyers. The 1980

Groundwater Code contains more rigorous provisions for new subdivisions in AMAs. The 1980 Code prohibits the sale of lease of subdivided land in an AMA without the demonstration of an assured water supply (A.R.S. § 45-576). The ADWR adopted the Assured and Adequate Water Supply Rules in 1995. To obtain an assured water supply determination, the statute requires a demonstration that there is: a physical, legal and continuous availability of the water supply for 100 years (A.A.C. R12-15-703).

- Encouraging the development of renewable supplies and providing incentives for the use of effluent: Reclaimed water, or effluent, is the one increasing water source in our state. As our population and water use grows, more treated wastewater will be available. Reclaimed water is treated to a quality that can be used for purposes such as agriculture, golf courses, park, industrial cooling, or maintenance of wildlife areas.

  The development of renewable supplies is encouraged through incentives provided in AMAS for the use of effluent and recycling or re-use of industrial wastewater.

CONSERVATION EFFORTS IN ARIZONA

Conservation is an important tool to maintain adequate water supplies, offset increases in groundwater pumping or forestall impacts of long-term drought. Arizona communities have a solid history of implementing successful conservation efforts. The last twenty-five years have seen the implementation of programs like the development of xeriscape booklets; landscape watering guidelines, public awareness/advertising campaigns, conservation workshops, classroom materials, and the installation of low flow plumbing fixtures in new construction and incentives for the retrofit of older, higher flow fixtures in existing buildings.

To cite just a few examples, Arizona communities serve as models in promoting best management practices for water conservation programs to others. For example, the cities of Phoenix and Gilbert are recognized nationally on the EPA's Water Efficiency website in their Conservation Case Studies. Phoenix's was highlighted for its conservation savings in the mid-1980s for high-flow fixtures and toilet retrofit program resulting in 170,000 homes retrofitted and 20,000 acre-feet/year savings. The case study also highlighted transitions to current conservation emphasis of changing behaviors and educating the next generation of water users with an even greater quantifiable savings. Gilbert's was cited for its multifaceted approach to water planning given its rapid population growth and creativity of its wastewater recharge program, where 5B gallons created recreational use areas, wildlife habitat and groundwater sustainablilty. Tucson's outdoor water use averages 48 gpcd and is recognized as a leader in reduction of outdoor water use in the West (e.g. Smart Water – Western Water Resources.) The City of Payson through active conservation management

programs including plumbing retrofits, mandatory hot water re-circulating pumps for new homes, prohibitions on new grass or turf, conservation measures tied to precipitation levels, vehicle washing prohibitions, reductions in outdoor water use, reuse of effluent, promotion of graywater use and rate structures that encourage efficient water use, etc. has reduced their water use to 92 gpcd in 2004. The Cities of Sierra Vista and Flagstaff have also established sound water conservation programs and a strong conservation ethic. The City of Sedona is pursuing a "grass-roots" approach to conservation through creation of citizen water conservation initiatives.

Many of the communities located within the AMAs frequently "pool" their resources and work together to implement common water conservation program elements while each individual community maintains its own local water conservation program that is specific to its unique water supply situation. This approach may be of use in rural areas where financial resources for conservation programs are often limited.

CONCLUSIONS:

Arizonans have been planning sustainable water resources for many years. Active Management Areas of the State have benefited from 25-years of wise water management and conservation programs through regulations contained in the 1980 Groundwater Management Act. This Act formalized regulations that had their beginnings as a result of concern over groundwater pumping as early as the 1950's. Securing Arizona's 2.8 million acre-feet per year of Colorado River water, construction of the Central Arizona Project, and the Salt and Verde River reservoir systems have all insulated the large population centers of the state from concerns of shortage.

Arizona's lingering drought conditions and potential shortage on the Colorado River has raised concern about the supplies the state has worked hard to secure. Our years of water resource planning have served us well and have reduced reliance upon our groundwater supplies. However, with surface water supplies diminished due to below normal precipitation levels over several years groundwater pumping will increase. Conservation is a tool that should be used to maintain adequate long-term supplies and offset interim increases in groundwater pumping.

A stronger "call to action" is needed since all residents share the responsibility of adopting water conservation as an Arizona lifestyle. The attributes of patience and persistence that resulted in the development of wise water management programs are needed to see Arizona through the lingering drought. These traits also play a role in creating a long-term conservation ethic for the state. Creation of an ethic or more appropriately a "culture of conservation" is important now more than ever. However, creating the culture is not enough, sustainability of the

culture should be the goal. Arizona residents should be asked to be part of the solution, and not remain idle. Public awareness must be heightened through the use of messaging that focuses on reducing our outdoor water use. Requesting that Arizona residents change their water use behaviors makes sense in our semi-arid environment.

Achieving measurable water savings for the state will require time, dedication of staff, resources and good degree of problem solving. Creation of water conservation goals as a guideline for reduction of water use is the next step beyond our previous efforts at the state and local level. Conservation goal setting provides the opportunity for local communities and residents to better understand their water use behaviors and determine whether they could be doing more to save water.

Arizona residents should be provided with the necessary direction and tools (education, technical assistance and funding) to "reduce their use". Adoption of conservation behaviors and a commitment by water providers and Arizonans to see the effort through is a responsible course of action. Creation of appropriate tax incentives or credits to encourage water conservation are already being explored and should receive the support of local, state, and federal agencies.

This document has been written in an effort to provide guidance to water users in the state and has been created through the input of stakeholders in various agencies, communities, watershed groups, education centers and from private citizens. An effort was made to hear concerns and implications of current and future water use within the urban and rural areas of the state. Early in the development process of this document it was clear that one effort or one strategy would not solve all of the water conservation issues within the state. The programs and actions outlined in this report are intended to provide statewide assistance to local communities and to serve as a supplement to existing water conservation efforts. The programs and actions recommended are offered as keys to success of creating and maintaining a conservation ethic for the State but also provide the means to reach the ultimate goal: saving water for Arizona.